

SELF ASSESSMENT TEST -16**CLASS 10+2****INVERSE TRIGONOMETRIC FUNCTIONS**

1. Find the domain of (a) $\sin^{-1} 2x$ (b) $\cos^{-1} \frac{x}{5}$.
2. Find the principal value of (a) $\sin^{-1} \left(\sin \frac{4\pi}{3} \right)$ (b) $\cos^{-1} \left(\cos \frac{7\pi}{6} \right)$ (c) $\cos^{-1}(\cos 10)$.
3. Prove that (a) $\sin^{-1} \frac{3}{5} + \cos^{-1} \frac{12}{13} = \cos^{-1} \frac{33}{65}$ (b) $2 \tan^{-1} \frac{1}{2} + \tan^{-1} \frac{1}{7} = \tan^{-1} \frac{31}{17}$.
4. Prove that $\tan^{-1} \frac{1}{4} + \tan^{-1} \frac{2}{9} = \frac{1}{2} \tan^{-1} \frac{4}{3}$.
5. Find the value of (a) $\tan \left(\sin^{-1} \frac{3}{5} + \cot^{-1} \frac{3}{2} \right)$ (b) $\sin \left(\sin^{-1} \frac{5}{13} + \sin^{-1} \frac{4}{5} \right)$.
6. Find the value of (a) $\sin \left[\cos^{-1} \left(\frac{-1}{2} \right) \right]$ (b) $\sin \left[\frac{\pi}{3} - \sin^{-1} \left(\frac{-1}{2} \right) \right]$.
7. Solve for x $\tan^{-1}(x+2) + \tan^{-1}(x-2) = \tan^{-1} \frac{8}{79}$ (b) $\tan^{-1} \left(\frac{x-1}{x-2} \right) + \tan^{-1} \left(\frac{x+1}{x+2} \right) = \frac{\pi}{4}$
8. Solve (a) $2 \tan^{-1}(\cos x) = \tan^{-1}(2 \cos ecx)$.
9. If $\tan^{-1} x + \tan^{-1} y = \frac{\pi}{4}$, prove that $x + y + xy = 1$.
10. Prove that (a) $\cot^{-1} \left(\frac{\sqrt{1+\sin x} + \sqrt{1-\sin x}}{\sqrt{1+\sin x} - \sqrt{1-\sin x}} \right) = \frac{x}{2}$.
11. Prove that $\cos \left\{ \tan^{-1} \left[\sin \left(\cot^{-1} x \right) \right] \right\} = \sqrt{\frac{1+x^2}{2+x^2}}$